

NOTE

First Report of *Ixodes kopsteini* Oudemans (Acari: Ixodida: Ixodidae) from the Kingdom of Cambodia, with a Summary of Known Hosts of this Tick in Continental Southeastern Asia

The uniquely ovoviviparous tick *Ixodes kopsteini* Oudemans is a widespread parasite of emballonurid, molossid, pteropodid and vespertilionid bats in the Oriental Zoogeographic Region and, to a lesser extent, the Afrotropical and Australian Regions (Hoogstraal and Aeschlimann 1982, Petney and Keirans 1994). In the archipelagic states of southeastern Asia, collections of this tick have been made as far southward as Bogor in western Java, Indonesia (Anastos et al. 1973), and as far eastward as Luzon in the Philippines (Kohls and Clifford 1968) and Ambon and Seram in Indonesia's Moluccan Islands (Maluku) (Kohls and Clifford 1961, Durden et al. 1990). However, outside peninsular Malaysia (Kohls and Clifford 1968) and Thailand (Gould et al. 1970, Tanskul et al. 1983), no collections of *I. kopsteini* have heretofore been reported from continental southeastern Asia, perhaps because of the human turmoil that prevailed there throughout the second half of the twentieth century. During the summer of 2001, teams from U.S. Naval Medical Research Unit No. 2 (NAMRU-2), Jakarta, Indonesia, and Cambodia's National Institute of Public Health (NIPH), Phnom Penh, conducted surveys for natural reservoirs of Nipah virus and lyssaviruses (rabies and close relatives) in Cambodia. On 11 July, while sampling a large population of the wrinkle-lipped bat, *Chaerephon plicata* (Buchanan), which has long inhabited the enormous attic space of the Royal Cambodian National Museum (Fig. 1), one of us (MJB) collected an adult male *C. plicata* (total body length 35 mm, mass 22 g) that harbored a single female *Ixodes* just above the right ear canal (not on the tragus or antitragus). The tick's location presumably

shielded it from host grooming. Subsequent examination revealed this specimen to be the first Cambodian example of *I. kopsteini*, which has been deposited (as RML 123173) in the U.S. National Tick Collection, Institute of Arthropodology and Parasitology, Georgia Southern University, Statesboro. The bat was accessioned (as voucher no. 6218) at the NAMRU-2/NIPH Laboratory, Phnom Penh. The Cambodian National Museum attic, which also harbored colonies of *Taphozous melanopogon* Temminck and *T. theobaldi* Dobson (the latter was not encountered during the 2001 surveys), is reputed to be among the largest single aggregations of bats found in an artificial structure anywhere in the world (C. E. Rupprecht, personal communication).

With one exception (Gould et al. 1970), all known collections of *I. kopsteini* from mainland Southeast Asia (Table 1) have been made from members of the so-called Mastiff bat family Molossidae, which is only modestly represented in tropical Asia (of 80 molossid species accepted by Wilson and Reeder (1993), just 8 occur in the Oriental Zoogeographic Region). However, some Southeast Asian molossids are widely distributed. *Chaerephon plicata*, in particular, has a vast range, extending from India and Sri Lanka eastward through southern China to Vietnam, Hainan Island and the Philippines, then southward through the Malay Peninsula, Sumatra, Borneo, Java, the Lesser Sunda Islands, and, southwest of Indonesia, the Cocos (Keeling) Islands in the Indian Ocean (Wilson and Reeder 1993, Nowak 1999). The range of this bat alone all but guarantees that *I. kopsteini* will eventually be found in the four Southeast Asian countries that have yet to yield col-



Fig. 1. Royal Cambodian National Museum, Phnom Penh, Cambodia; photo by M.J. Bangs, July 2001.

lections: Laos, Myanmar (Burma), Singapore, and Vietnam.

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Table 1. Bat species known to be hosts of *Ixodes kopsteini* in continental Southeast Asia.

Bat Species	Country and State/Province	Reference/Collection No.
Emballonuridae:		
<i>Taphozous theobaldi</i> Dobson	Thailand: Saraburi	Gould et al. 1970
Molossidae:		
<i>Chaerephon johorensis</i> (Dobson)	Malaysia: Selangor	Kohls and Clifford 1968
<i>Chaerephon plicata</i> (Buchanan)	Cambodia: Phnom Penh	RML 123173
	Malaysia: Melaka	RML 112146
	Thailand: Kanchanaburi and Saraburi	Tanskul et al. 1983
<i>Cheiromeles torquatus</i> Horsfield	Malaysia: Selangor	Kohls and Clifford 1961
<i>Mops mops</i> (de Blainville)	Malaysia: Selangor	Kohls and Clifford 1968

and are not to be construed as official or reflecting the views of the U.S. Departments of the Army, Navy, or Defense.

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